

XIV. On *Stenoptilia grandis* (*new species*). By T. A. CHAPMAN, M.D., F.Z.S.

[Read April 1st, 1908.]

PLATES XIV—XVII.

CERTAIN groups of the *Stenoptilia*s are not too easy to separate correctly into their component species. The gentian-feeding section is perhaps one of the most puzzling of these. Probably our *S. zophodactylus* is the most distinct.

But \**graphodactylus* and *coprodactylus* seem to me to be extremely difficult to discriminate, so much so, that I am not very clear as to what facts I could rely on in reply to any one who asserted them to be identical.

In their most pronounced and typical forms they are sufficiently different, but there have passed through my hands specimens that were more or less intermediate, or though apparently belonging to one species, presented characters supposed to be distinctive of the other.

If there is only one species, then the form that is the subject of this note is another form of it. But if *graphodactylus* (*pneumonanthès*) be distinct from *coprodactylus* then *S. grandis* is undoubtedly a third species.

It is characterised by its large size (exp. al. 30 mm.), and by the transverse pale marking on the upper plume of the fore-wing. In *graphodactylus* (*pneumonanthès*), Pl. XIV, fig. 6, this line is fairly transverse and not far from the middle of the separate part of the plume.

In *coprodactylus* (Pl. XIV, figs. 5 and 7) this line tends to be oblique and to be nearer the apex of the wing than in *graphodactylus*, but still running back internally, as if to reach the fork between the plumes. On *grandis* (Pl. XIV, fig. 4) this difference is extreme, the oblique line is well beyond the middle of the plume, and is very oblique, almost seeming to run from the apex to the middle of the inner border of the plume.

This line varies a good deal in different specimens of *graphodactylus* and *coprodactylus*, but in obliquity and

\* I do not propose to discuss the relation of *pneumonanthès* and *graphodactylus*.

approach to the hind margin, no specimens I have seen of either species are at all near to *grandis* in this respect. *Granulis* agrees with *coprodactylus* in the inner dark half of the fringe (continuous in *graphodactylus*), being broken up into spots.

On examining the ancillary appendages for some indication as to the relationship of these forms, one is met by the remarkable fact, that there is very little difference in these structures in the several species. The clasps are very remarkable and complex structures, but except in some slight differences in proportions and curvatures are quite alike not only in these gentian-feeding species, but species of other groups such as *pterodactylus* and *bipunctidactylus* are practically the same.

I find, however, certain differences in the tegumen that appear to be constant. These will be best understood by reference to the plates (XV); it will be seen that the tegumen of *grandis* has little affinity with that of *coprodactylus*, and is much more of the type of that of *graphodactylus*.

There is another difference that is of considerable importance, viz. the great size of these appendages in *grandis*, as compared with the other two species. (Compare Plates XVI and XVII, where all are equally magnified.) Were *grandis* merely an aberrational form, the large size of the imago generally would be accompanied with appendages of normal size. It is at least the rule for the appendages to preserve a normal development, notwithstanding great variation in size otherwise, so far as my observations go. This is true of specimens from the same region, but not always of geographical varieties, as of Swiss and British *Erebica æthiops*.

It is certain that though *coprodactylus* occurs on the same ground with *grandis*, it is physically impossible for them to be syngamic, nor as a matter of fact were any intermediate specimens taken. These specimens of *grandis* were taken July 29th, 1905, on the top of one of the spurs of the hill opposite Larche, Basses Alpes, at a height of rather over 6,000 feet. Some were taken on the wing, others were bred from pupæ found together with empty cases on the leaves of *Gentiana lutea*. It was remarkable that no trace of where the larvæ had fed on the plants could be found; the plants were almost all the large clumps of root leaves, without flowering stems; though a few had

flowering stems, the pupæ were quite unassociated with these and were usually on the mid-rib about the middle of the upper side of a leaf.

Except in size these pupæ differ very little from the others of the group.

I append a note on the pupa.

The pupæ were found on the centre of leaves of *Gentiana lutea*, altogether 14 were found, full, empty—good and bad—always near the centre of leaf, usually on the mid-rib, on upper surface and as usual head downwards. They are 12 to 13 mm. long. Thoracic portions rather swollen, 2.3 mm. wide, about 2 mm. from meta-thorax backwards, but with a falling in of sides (dorsally) of forward abdominal segments and meta- and portion of meso-thorax that gives an appearance to abdomen of being spindle-shaped, it tapers off very regularly in last four segments to a rather sharp point. The falling in of sides is in accentuation of the prominence of dorsal ridges in a hump on posterior margin of dorsum of 2nd thoracic.

Seen laterally, the pupa is straight ventrally—dorsally arches back from nose-horn to the hump on meso-thorax, then fuller to 1st abdominal whence it is fairly straight till last four segments. The dorsal ridges arch outwards on middle of mesothorax and form an elliptic raised surface, thence (*i.e.* from hump) they separate, especially on 1st abdominal and end at II of 3rd abdominal. There are no hairs, but there are points marking I and II on abdominal. The colour is green of most of abdomen tending to ochreous at last segments and also on meta-thorax and 1st abdominal; forwards it is overlaid by whitish, so that on front view the pupa is white. The appendage-cases are dark, getting nearly black in some pupæ; 2nd and 3rd legs form a free style beyond end of wings, down to middle of 6th abdominal. The venation of wings is marked, and the whole surface is finely ridged transversely. The pupa is like a large, robust *zophodactylus* pupa less richly coloured.

I have also a solitary specimen from Pajares (Asturias, Spain) that is paler than the French ones, and in facies suggestive of *coprodactylus*, but agrees in essential markings and in size with *grandis*; being a solitary specimen, I have not examined the appendages, but believe there is no doubt the specimen is specifically identical with those from Larche.

Hofmann notes under *coprodactylus*: "Male specimens from the Alps are often very large, remarkably pale and little marked; three very dark large specimens in Reutti's

collection came from Hohenkapf in Allgäu. I took a precisely similar specimen near Kelheim on June 3rd."

It is very possible that the dark specimens noted belonged to *grandis*, this is the only reference I have found to the species having possibly been observed.

*S. graphodactylus* is said to feed on *Gentiana lutea*, the food of *grandis*; *coprodactyla* on *Gentiana verna*. As an abundant and wider spread species, it is probable that the latter feeds on various gentians, *verna*, *acaulis*, etc., *lutea* being more likely an exception than not.

That *S. grandis* should be attached to the supposed food of *S. graphodactyla*, and at the same time more nearly resemble *coprodactyla*, may equally point to the three forms being distinct, or to all being races of one species.

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#### EXPLANATION OF PLATES XIV—XVII.

[See *Explanation facing the PLATES.*]

## EXPLANATION OF PLATE XIV.

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- FIG. 1. *Stenoptilia grandis*, ♂, real size.  
 2.    "               "               ♀,       "  
 3.    "               probably *grandis*, ♂, real size, from Pajares.  
 4. End of fore-wing of *S. grandis* × 3 diameters.  
 5 and 7.   "               "               *S. coprodactylus* × 4 diameters.  
 6.    "               "               *S. pneumonanthes* × 4 diameters.

Note, to make them look same size on the plate, the artist has magnified *grandis* only three times, the others four; unfortunately this obscures the great difference in size.

The figure 6 rather exaggerates the squareness of the end of the plume in *pneumonantes*, which in truth hardly affects the outline of the wing but refers to the pale cross line. It illustrates how, when you tell an artist what you see, he often sees it more distinctly and clearly than you do, and it is by no means always the artist who is wrong.

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8-13. Dark forms of *H. hyerana-hyerana*.

14-15.   "       "       "       "       *marginata*.

These are the darkest hitherto bred and are some of those mentioned in Proc. Ent. Soc., 1907, p. ii.

Compare these with figures of ordinary forms figured in E. M. M., Vol. 42, 1906, Pl. 3, and Trans. Ent. Soc. Lond. 1906, Pl. VIII.



1



2



3



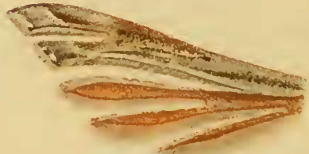
4



5



6



7



8



9



10



14



11



12



15



13

## EXPLANATION OF PLATE XV.

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Diagrams (from camera sketches) of tegumina of certain  
*Stenoptilias*  $\times 80$ .

FIG. 1. *Fuscus*.

2. *Bipunctidactylus*.

3. *Zophodactylus*.

4 and 5. *Coprodactylus*.

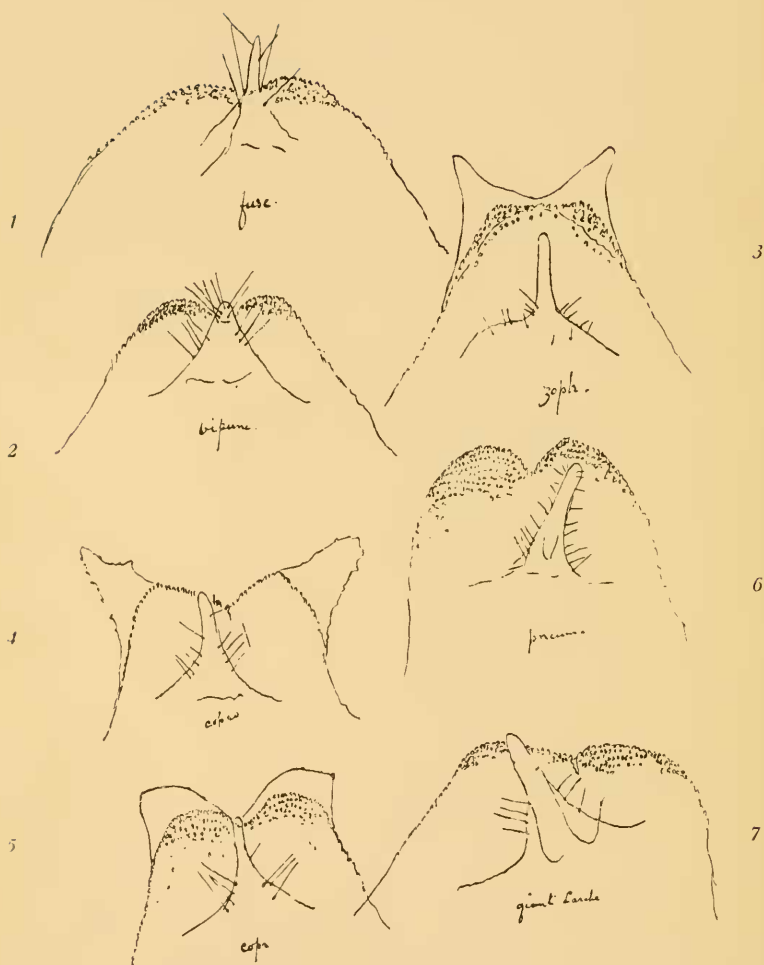
6. *Graphodactylus (pneumonanthes)*.

7. *Grandis*.

The terminal lobes of *coprodactylus* have a variable, irregular membrane extending beyond the scaled portion.

*Graphodactylus (pneumonanthes)* has the terminal lobes rounded with well-marked sulcus. *Grandis* resembles it closely in this respect.

The uncus also is much alike in these two species, being thick tapering regularly, the basal half with complicated fold and with sensory hairs nearly throughout, contrasting with *coprodactylus*, in which the uncus is more slender, with widened conical base, and hardly any sensory hairs on the slender terminal portion.



Diagrams of dorsal portions (tegumen) of Ancillary Appendages of Stenoptilias,  $\times 80$ .

EXPLANATION OF PLATE XVI.

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Ancillary appendages of *Stenoptilia grandis*  $\times$  45.



F. N. CLARK, Phot.

Ancillary Appendages of *S. grandis*,  $\times 45$ .

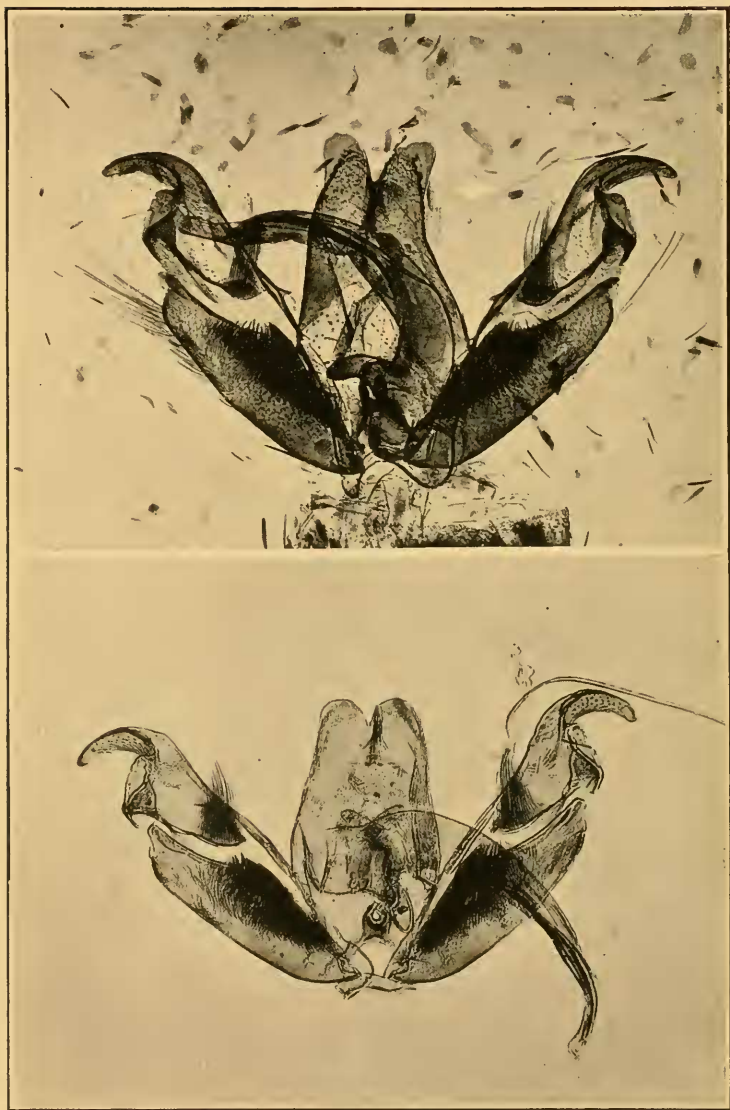
EXPLANATION OF PLATE XVII.

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Ancillary appendages of

FIG. 1. *Stenoptilia coprodactylus*  $\times 45$ .

2. „ *graphodactylus*  $\times 45$ .



F. N. CLARK, Phot.

Ancillary Appendages of (1) *S. coprodactylus* and  
(2) *S. graphodactylus*  $\times 45$ .